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Deep exploratory drilling is the final stage of exploratory drilling for petroleum. In 1950, 57 percent more deep exploratory drilling will be carried on than in 1949. In this connection, the number of wells in totally new areas will be considerably increased. The achieved scope of deep exploratory drilling assures the solution of the task set by the Five-Year Plan of creating developed reserves of oil-bearing land for exploitational drilling.

Some petroleum regions, however, lag in deep exploratory drilling resulting from unsatisfactory work organization, lack of the necessary repair and machinery base, and an inadequate supply of materials, tools, and spare parts for the equipment. There is a great lag particularly in drilling wells designed to throw light on the geological structure and oil-bearing properties of unexplored regions. This defect must be completely overcome in 1950.

In 1949, the speed of exploitational drilling increased 75 percent over 1940 for the Azneft' Association, 84 percent for the Kuybyshevneft' Association, and 212 percent for the Krasnokamskneft' Association.

Turbo-drilling solves the drilling problem in regions characterized by exceedingly hard rock, and was used in 1949 for entire petroleum regions. In Tuymazy, where the hardness of the rock being drilled approaches crystalline rock, the drilling speed increased 200 percent during the past 2 years.

Idle periods in drilling result from inadequate development of the working area and are often caused by faulty organization of material and technical supplies, particularly lack of spare parts for the equipment. USSR plants are producing better drilling equipment but they do not produce a sufficient number of spare parts. This situation should be remedied.

One serious flaw in the organization of drilling consists in the fact that the entire cycle of constructing an oil well from laying the foundation to putting the well into operation is in some cases not regarded as a single, composite, production process.

Various methods were proposed by a number of petroleum workers to speed up production. These included the formation of the first multiple-purpose brigade. During 2½ months of operation by the new method, one brigade drilled 5,250 meters, while during the 6 months preceding the introduction of this method only 5,166 meters had been drilled. This increased the average monthly performance from 900 meters to 2,100 meters, or doubled the labor productivity.

Large-block construction and assembly of drilling equipment which has been adopted most extensively by the Tashkalanefit' Trust of the Grozneft' Association has now been put into practice widely by a number of associations and trusts and has reduced the time required for constructing derricks from 14-25 days to 4-7 days.

In the field of construction, a new method of assembling the parts on the ground and subsequent hoisting of the assembled installation has been proposed and put into practice. This has resulted in lightening the work of the workmen and reducing construction time.

Heavy, labor-consuming drilling processes have been largely mechanized in the postwar years. This has considerably facilitated the work of the drillers and has increased their productivity. In 1948, labor productivity was 38.5 percent above 1946.

More than 30 percent of all the capital investment in the petroleum industry is accounted for by drilling oil and gas wells. A considerable reduction in the costs of drilling could be achieved if drilling would convert from Diesel power to electricity.

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At present, a new method of working petroleum deposits which preserves the original pressure is being used in Krasnodarneft' and Tuymazaneft' deposits. The method makes it possible to extract petroleum most completely from the depths of the earth with only one third to one fourth the usual number of wells, and it preserves the gusher period of the well until exploitation of the petroleum deposit has been completed. This method, which considerably lessens production costs, will be adopted in all newly opened deposits.

Air, gas, or water may be pumped into depleted seams as a means of recovering pockets of petroleum. Such secondary methods were employed successfully in 1949 in oil fields of the Malgobekneft' Trust of the Krasnodarneft' Association and of the Azneft', Ukreneft', and Grozneft' associations.

Laureate of the Stalin Prize Molchanov has designed apparatus which makes it possible to mechanize the labor-consuming operations in the underground repair of oil wells and at the same time, shortens the time required for underground repair. At present, 100 such machines have been introduced in oil fields.

Measurement techniques must be greatly developed. Deep-well gauges to determine pressure, dynamographs (recording dynamometers) for checking the condition of the pumping installations, instruments for determining the productivity of wells, and other devices for measuring must be introduced in all oil fields.

One of the chief tasks confronting petroleum workers is the elimination of all losses of petroleum and gas which occur during extraction. This is being done very inadequately at present. Petroleum is also lost during transportation and, in a number of regions, gas is far from completely exploited.

The great increase in the requirements of the national economy for petroleum products has predetermined a yearly increase in petroleum refining, an increase in the range of light petroleum products, and oils, and an improvement in their quality. In the fourth quarter of 1949, the production level of petroleum products exceeded that approved by the Five-Year Plan for 1950. Petroleum refineries are more fully utilizing their capacities. Consumption of fuel has been decreased and losses of petroleum and petroleum products have been reduced.

Along with the introduction of new technological processes which assure the yield of high-grade aviation and automobile and tractor fuel and oils, considerable work has been carried on in the reconstruction and modernization of operating installations for petroleum refining and for cracking raw materials. The processing of petroleum products has increased particularly in regions of the east.

New methods of work organization and new technological processes have raised labor productivity in the petroleum industry to almost 150 percent of what it was in 1946.

Petroleum machine building increased during the postwar years, especially during 1948 and 1949. Workers in petroleum machine-building plants are perfecting the technology of preparing petroleum equipment, improving work organization, raising labor productivity, and saving tens of millions of rubles for the state. High-speed methods of processing metals and the mechanization of labor-consuming processes are being introduced in the machine-building plants. Performance per worker was more than twice as high in 1949 as in 1946.

Petroleum machine-building plants have started series production of a number of machines which formerly were not produced in the USSR. These include sludge pumps, power-driven drilling and cementing machines, machines for the capital repair of oil wells, machines for removing paraffin, pumps for petroleum refineries, turboblowers, and many other types of equipment, apparatus, and instruments.

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During 1949, constructors in the petroleum industry carried out 30 percent more construction and assembly work than they did in 1948. A number of new oil fields were opened up, new petroleum refineries were constructed, thousands of kilometers of pipe line were laid, and a large number of metal tanks for petroleum and petroleum products were constructed.

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